Features

- 2:1 Wide Input Voltage Range
- 20 Watts Output Power
- 1.6kVDC Isolation
- Fixed Operating Frequency
- Six-Sided Continuous Shield
- International Safety Standard Approvals
- UL 1950 Component Recognized
- Standard 50.8 x40.6x10.2mm Package
- Efficiency to 86%

POWERLINE
DC/DC-Converter

RP20-S_D_TE Series

20 Watt Single, Dual & Triple Output

Selection Guide 12V, 24V and 48V Input Types

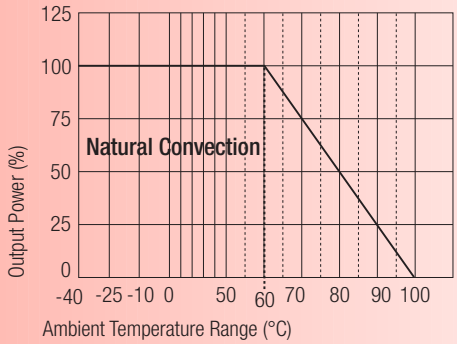
Part Number	Input Range	Output Voltage	Output Current	Input [4] Current	Efficiency[5]	Capacitive[6] Load max.
	VDC	VDC	mA	mA	%	µF
RP20-123.3SE	9-18	3.3	4000	1507	77	13000
RP20-1205SE	9-18	5	4000	2193	80	6800
RP20-1212SE	9-18	12	1670	2136	82	2200
RP20-1215SE	9-18	15	1330	2136	82	755
RP20-243.3SE	18-36	3.3	4000	743	78	13000
RP20-2405SE	18-36	5	4000	1082	81	6800
RP20-2412SE	18-36	12	1670	1054	83	2200
RP20-2415SE	18-36	15	1330	1054	83	755
RP20-483.3SE	36-75	3.3	4000	367	79	13000
RP20-4805SE	36-75	5	4000	543	82	6800
RP20-4812SE	36-75	12	1670	527	83	2200
RP20-4815SE	36-75	15	1330	527	83	755
RP20-1205DE	9-18	±5	±2000	2193	80	±3400
RP20-1212DE	9-18	±12	±833	2136	82	±680
RP20-1215DE	9-18	±15	±666	2136	82	±450
RP20-2405DE	18-36	±5	±2000	1082	81	±3400
RP20-2412DE	18-36	±12	±833	1054	83	±680
RP20-2415DE	18-36	±15	±666	1041	84	±450
RP20-4805DE	36-75	±5	±2000	541	81	±3400
RP20-4812DE	36-75	±12	±833	514	85	±680
RP20-4815DE	36-75	±15	±666	508	86	±450
RP20-123.312TE	9-18	3.3 / ±12	3000 / ±300	1926	78	4700 /±220
RP20-123.315TE	9-18	3.3 / ±15	3000 / ±250	1959	78	4700 /±220
RP20-120512TE	9-18	5 / ±12	2000 / ±300	1885	80	4700 /±220
RP20-120515TE	9-18	5 / ±15	2000 / ±250	1919	80	4700 /±220
RP20-243.312TE	18-36	3.3 / ±12	3000 / ±300	950	79	4700 /±220
RP20-243.315TE	18-36	3.3 / ±15	3000 / ±250	967	79	4700 /±220
RP20-240512TE	18-36	5 / ±12	2000 / ±300	931	81	4700 /±220
RP20-240515TE	18-36	5 / ±15	2000 / ±250	947	81	4700 /±220
RP20-483.312TE	36-75	3.3 / ±12	3000 / ±300	468	80	4700 /±220
RP20-483.315TE	36-75	3.3 / ±15	3000 / ±250	477	80	4700 /±220
RP20-480512TE	36-75	5 / ±12	2000 / ±300	459	82	4700 /±220
RP20-480515TE	36-75	5 / ±15	2000 / ±250	467	82	4700 /±220

Description

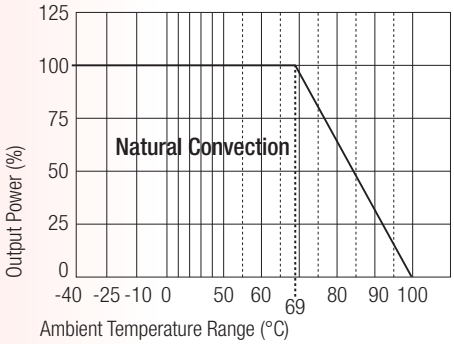
The E-Series of DC/DC Converters are fully certified to EN 60950: 2000. This makes them ideal for all Telecom and safety applications where approved isolation is required.
They also meet UL 1950 and CSA 950 standards [10] .

Derating-Graph (Ambient Temperature)

RP20-4805SE



RP20-4805SEW With Heat Sink

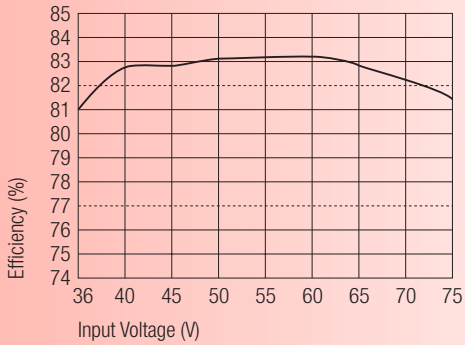


Derating graphes are valid only for the shown part numbers. If you need detailed derating-information about a part-number not shown here please contact our technical customer service at info@recom-development.at

Typical Characteristics

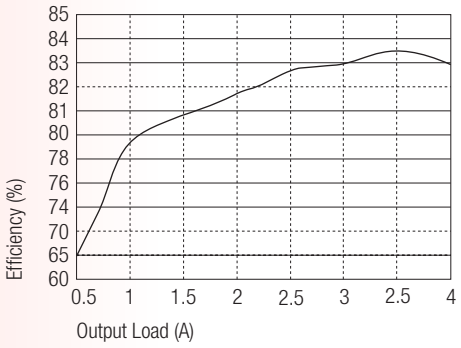
RP20-4805SE

Efficiency VS Input Voltage



RP20-4805SE

Efficiency VS Output Load



Specifications (typical at nominal input and 25°C unless otherwise noted)

Input Voltage Range	12V nominal input	9-18VDC
	24V nominal input	18-36VDC
	48V nominal input	36-75VDC
Input Filter		Pi Type
Input Surge Voltage (100 ms max.)	12V Input	36VDC
	24V Input	50VDC
	48V Input	100VDC
Input Reflected Ripple (nominal Vin and full load)		25mAp-p
Start Up Time (nominal Vin and constant resistor load)		20ms typ.
Remote ON/OFF (see note 7)	DC-DC ON	Open or 3.5V < Vr < 12V
	DC-DC OFF	Short or 0V < Vr < 1.2V
Remote OFF input current	Nominal input	20mA
Output Power		20W max.
Output Voltage Accuracy (full Load and nominal Vin)	Single & Dual	±2%
	Triple 3.3V, 5V	±2%
	Auxiliary	±5%
Voltage Adjustability		±10%

continued on next page

RP20-S_D_TE Series

Specifications (typical at nominal input and 25°C unless otherwise noted)

Minimum Load (see Note 1)		10% of FL
Line Regulation (LL-HL at full load)	Single (W)	±0.2%
	Dual (W)	±0.5%
	Triple 3.3V, 5V	±1%
	Auxiliary	±5%
Load Regulation (25% to 100% FL)	Single	±0.5%
	Dual	±3%
	Triple 3.3V, 5V	±2%
	Auxiliary	±5%
Cross Regulation (Note 9)	Dual	±5%
	Triple 3.3V, 5V	±2%
	Auxiliary	±5%
Ripple and Noise (20MHz bandwith)	Single	75mVp-p
	Dual	100mVp-p
	Triple 3.3V, 5V	50mVp-p
	Auxiliary	1% of Vout
Temperature Coefficient		±0.02%/°C, max.
Transient Response (25% load step change)		500µS
Over Voltage Protection	3.3V	3.9V
Zener diode clamp (only single)	5V	6.2V
	12V	15V
	15V	18V
Short Circuit Protection		Hiccup, automatic recovery
Efficiency		see „Selection Guide“ table
Isolation Voltage		1.600VDC min.
Isolation Resistance		10^9 Ω min.
Isolation Capacitance		300pF max.
Operating Frequency		300kHz typ.
Approved to Safety Standards (see note 10)		UL 1950, EN60950
Operating Temperature Range		-40°C to +85°C(with derating)
Maximum Case Temperature		+100°C
Storage Temperature Range		-55°C to +105°C
Thermal Impedance	Natural convection	10°C/Watt
	Natural convection with Heat Sink	8.24°C/Watt
Thermal Shock		MIL-STD-810D
Vibration		10-55Hz, 2G, 30 Min. along X, Y and Z
Relative Humidity		5% to 95% RH
Case Material		Nickel-Coated copper
Base Material		Non-conductive black plastic
Potting Material		Epoxy (UL94-V0)
Conducted Emissions	EN55022	Level A
Radiated Emissions	EN55022	Level A
ESD	EN61000-4-2	Perf. Criteria 2
Radiated Immunity	EN61000-4-3	Perf. Criteria 2
Fast Transient	EN61000-4-4	Perf. Criteria 2
Surge	EN61000-4-5	Perf. Criteria 2
Conducted Immunity	EN61000-4-6	Perf. Criteria 2

continued on next page

RP20-S_D_TE Series

Specifications (typical at nominal input and 25°C unless otherwise noted)

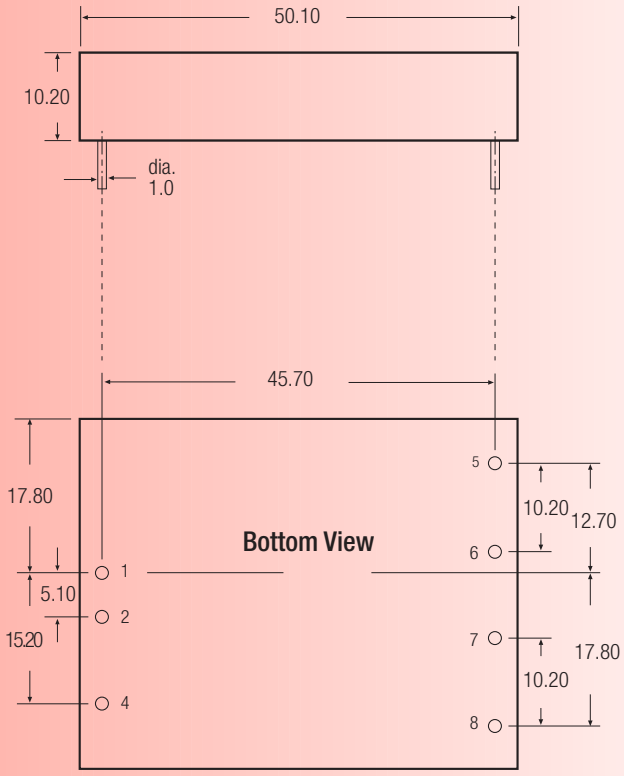
Weight	48g
Dimensions	50.8 x 40.6 x 10.2mm
MTBF (see note 2)	1.928 x 10^6 Hours

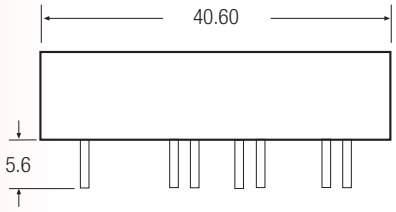
Notes :

1. The RP20 series requires a minimum of 10% loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
2. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
3. Simulated source impedance of 12uH. 12uH inductor in series with +Vin.
4. Maximum value at nominal input voltage and full load of standard type.
5. Typical value at nominal input voltage and full load.
6. Test by minimum Vin and constant resistor load.
7. The ON/OFF control voltage is reference to negative input.
8. Heat sink is optional and P/N: 7G-0011A. Operation temperature range please see curve.
9. Cross regulation: Dual output—Asymmetrical load 25% to 100% full load
   Triple output – 3.3V / 5V 100% load and one of auxiliary 100% load, other auxiliary load change from 25% to 100% load
10. The RP20-xxxxTE (triple outputs) do not carry the UL certification.
11. See application notes for EMI-filtering.

Package Style and Pinning (mm)

3rd angle projection





Pin Connections

Pin #	Single	Dual	Triple
1	+Vin	+Vin	+Vin
2	-Vin	-Vin	-Vin
4	CTRL	CTRL	CTRL
5	No Pin	+Vout	+Auxiliary
6	+Vout	Com	+3.3V / 5V
7	-Vout	-Vout	Com
8	Trim	Trim	-Auxiliary

Pin Pitch Tolerance ±0.35 mm

External Output Trimming

Output can be externally trimmed by using the method shown below.
( ) for dual output trim